IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

P3 INTERNATIONAL CORP. and DANIEL LIU, Plaintiffs, v. UPM MARKETING, INC., UPM TECHNOLOGY (USA), INC., and SMARTLABS, INC., d/b/a Smarthome, et al. Defendants.	)	ECF CASE Case No. 08 Civ. 5086 (DLC)

DECLARATION OF C.M. YIP

I , C.M. Yip, declare as follows:

1. I am Director of Engineering of electronics products at Mandolyn Electronic Technology Inc. ("Mandolyn") , Markham, ON, Canada.

2. I graduated from University of Hong Kong with a bachelor's degree in Electrical Engineering in 1983. Before joining Mandolyn, I have been working in various companies in the field of electronic engineering, including 6 years as the Engineering Manager in Texas Instruments (Asia) Limited in Hong Kong.

3. I am the lead designer of a series of power meter products and in particular I am the lead designer of the EM100 and EM130 products.

4. I was chief designer of a series of earlier products that each included the features of the later EM100 and EM130 products. As such I am knowledgeable about the function, operation, design and development of UPM products available prior to the filing date and/or invention date of U.S. Patent No. 6,095,850 ("the '850 patent").

5. In 1994 I was the lead designer of an energy meter, and completed a design in December 1994 that was the first model of plug-in energy meter I was involved with. This December 1994 energy meter was based on a microprocessor made by Holtek. The energy meter had features for display of voltage, current, power (Watt - voltage times current) and kWh (kilowatt hour), cost calculation (based on kWh and input cost/kWh) and an optional timer function. The design has similarities to power meters which were starting to appear in Europe in 1994 and prior to 1994. The initial name/internal reference at Mandolyn for this power meter design is CPU041.

6. I continued my work as lead power meter designer and in February 1995 we designed a slightly revised/improved version with the same operating features for display of voltage, current, power and KWh (kilowatt hour), cost calculation (based on KWh and input cost/KWh) and an optional timer function. The initial name/internal reference at Mandolyn for this power meter design is CPU042.

7. I continued my work as lead power meter designer and in July 1997 we completed a power

meter design using a Samsung CPU. The energy meter had features for display of voltage, current, power and KWh (kilowatt hour), cost calculation (based on KWh and input cost/KWh) and an optional timer function as well as the added features of power factor measurements, frequency measurements, DCF (D=Deutschland (Germany), C=long wave signal, F=Frankfurt) radio clock, and timer functions. The initial name/internal reference at Mandolyn for this power meter design is CPU018.

8. I continued my work as lead power meter designer and in August 1998 I completed a power meter design using another Samsung CPU. The energy meter had features for display of voltage, current, power and KWh (kilowatt hour), cost calculation (based on KWh and input cost/KWh) and an optional timer function as well as the added features of power factor and frequency measurement, DCF radio clock, and timer functions. The initial name/internal reference at Mandolyn for this power meter design is CPU070.

9. I continued my work as lead power meter designer and in December 1998 we started the design of a tariff grade energy meter (model EEM) using the SAMES (an IC manufacturer in South Africa specialized in energy meter design) energy meter Integrated Circuit (IC).

10. I continued my work as lead power meter designer and in December 1999 we completed the design of a power meter using a Samsung CPU. The energy meter had features for display of voltage, current, power and KWh (kilowatt hour), cost calculation (based on KWh and input cost/KWh) and an optional timer function as well as the added features of power factor and frequency measurement, DCF radio clock, and timer functions. The initial name/internal

reference at Mandolyn for this power meter design is CPU079.

11. From 1996 to 1998 we advertised our power meter products PM-777 and PM 100 (which first used the design CPU 041 with CPU by Holtek and later used the design CPU 070) in the magazine "Hong Kong Electronics" distributed in the U.S. by Hong Kong Trade Development Council. Like the EM 100 and EM 110, the PM 100 and PM 777 did not use a discrete analog-to-digital converter and used a CPU for conversion of analog signals.

12. From 1996 onward we sold energy meters to customers/distributors who in turn distributed catalogues of energy meter to their customers.

13. Since at least September 1997 sellers issued commercial invoices and transaction documents when we sold the energy meters to our clients including sales in European countries. Numerous individuals made inquiries about the above noted products including U.S. companies, U.S. individuals.

14. As I indicated in paragraph 5 above, I do not believe that our first design of 1994 was the first plug and socket power meter with a controlled display for indicating different power information. There were numerous other designs which date back at least to the 1970s. A listing of these designs and a discussion of these designs would be too lengthy. However, Exhibit D3 shows many examples with most at least having a display, buttons for display, socket and plug. Accordingly, I will refer to Japan Patent Office publication H8-184616 (JP 616) with translation (EXHIBIT D1) which includes an example of each of the features discussed below with

reference to the claims of the '850 patent. The only feature mentioned in the claims of the '850 patent that is not disclosed in JP 616 is the power factor parameter, a feature that is well-known in the power meter field. Indeed, every concept disclosed in the '850 patent was well known in the power meter field and can be found in prior art printed publications. Further, the prior designs that I made, starting four years before the filing date of the '850 patent, included most of the claimed and disclosed features of the '850 patent. I have reviewed the claim construction position of P3 (made in the document PLAINTIFFS' MARKMAN MEMORANDUM SUPPORTING THEIR PATENT CLAIMS CONSTRUCTION). I have also reviewed the declaration of Shawn M. Herzinger. I have further also reviewed the request for re-examination made by UPM Marketing, Inc. which shows that all of the disclosed features of the '850 patent are old and well-known from prior printed publications. I particularly refer to Exhibit A attached to the P3 Claim Construction Memorandum. Based on my over 14 years of work in the design of consumer electronic products, and in particular electronic power meters, I am a person skilled in the art of electronic circuitry and design of consumer electronic products and in particular a person skilled in the art of electronic circuitry power meters, and I can state the following about the meaning of claim terms that are used in the '850 patent.

15. The position of P3 in construing claim 1 is based on a misunderstanding of the function of the central processing unit (CPU) 14 in the disclosed design of the '850 patent. The CPU 14 does not detect a plurality of electrical parameters of the electric appliance during operation. Instead, characteristics of the electrical power signal, i.e., voltage, current and phase attributes (from a zero crossing circuit) are provided in a digital form to the CPU. The detecting is by a voltage detecting circuit (Column 3, lines 23 - 25) which connects a voltage from two powerlines (wires)

to an amplifier 11. The amplifier then feeds a conditioned signal to an analog to digital (AD) converter 13 which provides a digital signal representing the detected characteristic to the CPU 14. A zero crossing detecting circuit 12 is also provided as part of the voltage detection circuit. A current detecting circuit (Column 3, lines 25 - 27) is provided including resistor 16a that provides a voltage drop signal to amplifier 16 which provides a conditioned analog signal to the AD converter 17 which provides a digital signal to the central processing unit 14. The term in the claim 1 "control circuit" is not a term of art that provides any information as to the structure of the voltage detecting circuit, current detecting circuit and zero crossing detecting circuit. The CPU does not provide any detecting function. Accordingly, one of ordinary skill the art must look to the application text to understand what the claimed "control circuit... ...for detecting a plurality of electrical parameters of the electric appliance during operation" is. There is no question that the CPU, does not provide the function of detecting a plurality of electrical parameters of the electric appliance during operation. The features that provide this function are the lines from the two wires, the amplifier 11, the AD converter 13, resistor 16a, wires to amplifier 16, amplifier 16, and AD converter 17 which provides a digital signal to the central processing unit 14. A zero crossing detecting circuit is also part of the voltage detecting circuit. Without these features, there is no structure corresponding to the claimed function. Mr. Shawn M. Herzinger's definition of circuit and control circuit require structure to understand how the function takes place.

16. It is not correct to state that the re-examination request of the '850 patent by UPM presents an interpretation of claim 1 which is general and not specific to all of the disclosed features of the control circuit of the '850 patent. JP 616 has a disclosure of the same voltage detecting circuit,

current detecting circuit and zero crossing detecting circuit as disclosed in the '850 patent. The voltage detecting circuit, current detecting circuit have the amplifier (as construed by P3 - see below) 12/13 16/13, A/D converter 17 feeding to a CPU 18. Specifically as stated in the translation of JP 616 at paragraph [0016]:

"[0016] In order to digitize the respective signals V and I for the voltage and electric current that are inputted into the voltage/electric current measurement switching portion 13, an eight-bit A/D converter 17 is connected to this switching portion 13, and a microprocessor 18 is also connected to the A/D converter 17."

UPM Marketing is consistent in reading claim 1 as requiring structure to perform the function with each element of this structure being found in the prior art and specifically found in JP 616.

17. The meaning of the term "parameters" is specified in the '850 patent in the list of parameters from claim 2. Given that claim 2 clearly specifies a list of parameters as:

> *"present time, voltage value, current value, watt, kilowatt-hour, apparent power value, and power factor"*

The term parameters must at least be construed to include: present time, voltage value, current value, watt, kilowatt-hour, apparent power value, and power factor.

18. The following additional points regarding parameters are important for a general understanding of the claims of the '850 patent, the UPM EM100/130 products and the prior art publications. Some of the "parameters" as defined by claim 2 are detected characteristics of the electrical power signal (voltage value, current value, zero crossing) or are detected from a clock or other wise (present time) whereas other "parameters" (kilowatt-hour, apparent power value,

and power factor) are calculated based on the signal characteristics present time, voltage value, and current value. Further, voltage typically does not vary significantly (in the US 110 V AC). As power is voltage value times current value (VA -volt amps or Watts), the power consumption value KW is an indication of current. The electrical power consumption value - power per time (KWh), and the total power consumed and the cost are based on voltage and current (and also possibly phase information). Without changing the structure of what is disclosed in JP 616, the device of JP 616 can display voltage and current. Such display of detected values is simply not mentioned as it is generally not important. Nevertheless, it is well known to display any and all of present time, voltage value, current value, watt, kilowatt-hour, apparent power value, and power factor. The 1996 advertisement for our power meter products PM-777 and PM 100 in the magazine "Hong Kong Electronics" Vol. 5, 1996 Hong Kong Development Council indicates the display of "V" (volts), "A" (amps - current), "VA" (volt x amps - power - Watts), KWh (kilo watt hrs. - power times time), currency unit/KWh, operating time and two price settings (EXHIBIT D3).

19. The term "amplifier" is used in the '850 patent with reference to an amplifier 11 that is part of a voltage detecting circuit as well as to a current amplifier 16 that is part of a current detecting circuit. These "amplifier" terms are also found in claims 5, 6, 7 at 10 and 11. A basic meaning for the term "amplifier" is a device capable of increasing the magnitude or power level of a physical quantity, such as electric current. The P3 position that one of the "amplifiers" lowers or decreases the magnitude or power level is contrary to the normal meaning. It could be that the term is used by mistake. In considering what is shown and described in the '850 patent it can be noted that analog-to-digital converters (such as ADC 13) typically operate at low voltage levels

such that a step down from 110 V AC before the signal reaches the analog-to-digital converter would be appropriate. However, the text and disclosure of the '850 patent does not provide an explanation. To the extent that P3 is arguing for a particular meaning to this term, such that the disclosed device of the '850 patent works, the claim language and features shown in the '850 patent must be considered the same as any other similar (prior art) interface between a detected voltage signal at a wire (powerline) and a subsequent analog-to-digital converter. Accordingly, if the statement:

> *"It is well-understood by those in the art that digital electronic circuitry does not operate at high voltage. Accordingly, when a typical voltage signal of 110 volts is introduced into a circuit, it has to be attenuated in order to be processed by the circuitry."*

is accepted, and the term "amplifier" is considered a "device that changes the amplitude of a signal created by the detection of the voltage" then JP 616 at 12 /13 has the claimed "voltage amplifier" between the power lines (wires 11) and the A/D converter 17. If the feature feeding the detected line voltage to the A/D converter is well understood, it is known from JP 616 and not a distinction between JP 616 (or other prior art) and the claims of the '850 patent.

20. An analog-to-digital converter is a device sold as a component. These components provide a defined conversion or translation from continuous analog signals into proportional discrete digital signals. Examples of off-the-shelf components are attached as EXHIBIT D2. The person of ordinary skill in the art understands the term to mean such a standard off-the-shelf component used as part of a circuit for such conversion. Such an analog-to-digital converter is a discrete device and is claimed as an extra element of the control circuit and not the CPU. JP 616

(EXHIBIT D1) mentions an 8-bit A/D converter 17. Other A/D converters may be selected by the designer and incorporated into a design, based on the appropriate need. From the '850 patent it is quite clear that a discrete or defined AD converter element is what is meant by the term analog-to-digital converter. Such an A/D converter element is discrete or separate from the CPU. The term analog-to-digital converter as used in the '850 patent at least requires a component that is a separate component from the CPU. The claims and text of the '850 patent make it clear that both a CPU is provided and another device, namely an analog-to-digital converter device is provided as another element.

21. In the P3 proposed claim construction there is a discussion of voltage and current values being received directly or indirectly from sources. This appears to be a misstatement or misunderstanding as to the differences between what is claimed in the claims of the '850 patent and what is present in the EM 100 and EM 130 products. With the EM 100 and EM 130 the CPU varies an output applied to the RC filter (R1/C10) that in turn applies a RC filter signal to a comparator (U3B) . The output of the comparator is low and goes high when the current/voltage input signal matches the RC filter signal. During this process the CPU also measures each on and off time of the comparator output. This duty cycle is proportional with the voltage or current input signal. This uses ratio of the duration of "high" state to the total time of the comparator for the CPU to determine the voltage or current input. This is different from a defined conversion from continuous analog signal to proportional digital signals as with an analog-to-digital converter. As mentioned this control circuitry does not use a voltage signal amplification and does not use an A to D converter as with the claimed control circuit. With the EM 100 and EM 130 products the CPU, an RC filter (R1/C10) and a comparator (U3B) cooperate to form a digital

signal that is proportional to the detected voltage (for voltage processing) and proportional to the detected current (for current processing). As such, there is no analog-to-digital converter. The structure that provides the digital signal that is proportional to voltage or current does not use an analog-to-digital converter. Further this digital signal that is proportional to voltage or current is provided at least in part by the programmable integrated circuit (CPU). The EM 100 and EM 130 do not have all of the elements required by the claims.

22. The features of the EM 100 and EM 130 products in which the CPU, the RC filter (R1/C10) and a comparator (U3B) cooperate to form a digital signal that is proportional to the detected voltage or current is not equivalent to the claimed analog-to-digital converter. The claimed analog-to-digital converter is clearly a separate additional feature from the CPU as claimed. The claims require another element beyond what is provided in the EM 100 and EM 130 products. Further, the design of the EM 100 and EM 130 products provides a low cost plug-in energy meter, which has a special working principle that eliminates expensive on-board or built-in analog-to-digital convertor(s). To achieve this, an algorithm in the CPU works to provide an input to the CPU (another input) with a digital signal proportional to the voltage or current analog input signal. This Pulse Width Modulation or Duty Cycle Technique is a different way to provide a digital signal proportional to the voltage or current analog input signal with this done with different elements and without the claimed element. Further this provides a significantly different result in avoiding the cost of the expensive on-board or built-in analog-to-digital converter(s).

23.I declare under penalty of perjury under the laws of the United States of America that the

foregoing is true and correct.

Executed on MARCH 26, 2009

C.M. Yip

C.M. Yip